

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (original) A method for producing a hard carbon film on a polymeric surface, the method comprising:
  - (a) exposing the surface to a plasma comprising one or more SF<sub>x</sub> species where *x* may range from 1 to 5; and
  - (b) converting the polymeric surface into a film comprising at least about 90 atomic percent carbon.
2. (original) The method of claim 1, wherein the polymeric surface comprises carbon, oxygen and hydrogen atoms.
3. (original) The method of claim 1, wherein the polymeric surface is oxidized.
4. (original) The method of Claim 1, wherein the polymeric surface is converted into a film comprising at least about 95 atomic percent carbon.
5. (original) The method of Claim 1, wherein the surface is exposed to the plasma at a pressure from about 50 to 500 mTorr.
6. (original) The method of Claim 1, wherein the surface is exposed to the plasma at a temperature from about 20 to 100°C.
7. (original) The method of Claim 1, wherein the surface is exposed to the plasma for no more than about 10 minutes.
8. (original) The method of Claim 1, wherein the polymeric surface comprises a polymer selected from the group consisting of poly(acrylic acid), poly(methyl methacrylate) and polycarbonate.
9. (original) The method of Claim 1, wherein the polymeric surface comprises a polymer selected from the group consisting of polyethylene, polypropylene and polystyrene.

10. (original) The method of Claim 1, wherein the polymeric surface is comprised of a polymeric layer disposed on an underlying substrate.

11. (original) The method of Claim 10, wherein the polymeric layer comprises poly(acrylic acid).

12. (original) The method of Claim 1, wherein the polymeric surface is exposed to the plasma for a time sufficient to produce a film comprising no more than about 5 atomic percent oxygen.

13. (original) The method of Claim 1, wherein the polymeric surface is exposed to the plasma for a time sufficient to produce a film comprising no more than about 1 atomic percent hydrogen.

14. (original) The method of Claim 1, wherein the exposure of the polymeric surface to the plasma produces a film comprising no more than about 1 atomic percent fluorine.

15. (original) The method of Claim 1, wherein the plasma is substantially free of oxygen.

16. (original) The method of Claim 1, wherein the plasma is substantially free of hydrocarbon precursors.

17. (original) The method of Claim 1, wherein the polymeric surface is exposed to the plasma for a time sufficient to produce a film having a thickness from about 0.5 to 5 microns.

18. (currently amended) A surface-modified substrate comprising:

- (a) a substrate; and
- (b) a surface film comprising a cross-linked network of carbon chains disposed on the substrate, wherein the surface film comprises at least 90 atomic percent carbon and further wherein the surface film has a hardness of at least about 950 kg/mm<sup>2</sup> as measured by Knoop microhardness at a load of 25 grams or a Mohs hardness of at least 9 as determined by a fretting wear test using a ruby ball.

19. (original) The surface modified substrate of Claim 18, wherein the surface film comprises a polymer from which hydrogen atoms, oxygen atoms, or a combination of hydrogen and oxygen atoms have been extracted.

20. (currently amended) ~~The surface modified substrate of Claim 18,~~ A surface-modified substrate comprising:

(a) a polymeric substrate; and

(b) a surface film comprising a cross-linked network of carbon chains integrated into the polymeric substrate, wherein the surface film comprises at least 90 atomic percent carbon.

21. (original) The surface-modified substrate of Claim 18, wherein the surface film comprises at least about 95 atomic percent carbon.

22. (original) The surface-modified substrate of Claim 18, wherein the surface film has a thickness from about 0.5 to 5 microns.

23. (cancelled)

24. (original) The surface-modified substrate of Claim 18, wherein the surface film has a hardness of at least about 1300 kg/mm<sup>2</sup> as measured by Knoop microhardness at a load of 5 grams.

25. (original) The surface-modified substrate of Claim 18, wherein the surface film has a Mohs hardness of at least 9 as determined by a fretting wear test using a ruby ball.

26. (original) The surface-modified substrate of Claim 18, wherein the surface film has a friction of no more than about 22% relative to hardened steel as measured by a fretting wear test.

27. (currently amended) The surface-modified substrate of Claim ~~18~~20, wherein the substrate comprises a polymer selected from the group consisting of poly(acrylic acid), poly(methyl methacrylate) and polycarbonate.

28. (currently amended) The surface-modified substrate of Claim ~~18~~20, wherein the substrate comprises a polymer selected from the group consisting of polystyrene, polyethylene and polypropylene.

29. (original) The surface-modified substrate of Claim 18, wherein the surface film comprises no more than about 5 atomic percent oxygen.

30. (original) The surface-modified substrate of Claim 18, wherein the surface film comprises no more than about 1 atomic percent hydrogen.

31. (original) The surface-modified substrate of Claim 18, wherein the surface film comprises no more than about 1 atomic percent fluorine.

32. (new) The surface-modified substrate of Claim 18, wherein the substrate is a window, a medical implant or a lens.

33. (new) The surface-modified substrate of Claim 20, wherein the substrate is a window, a medical implant or a lens.

34. (new) A surface-modified substrate comprising:  
(a) a polymeric substrate;  
(b) a surface film comprising a cross-linked network of carbon chains disposed on the substrate, wherein the surface film comprises at least 92 atomic percent carbon and further wherein the surface film is not a polycrystalline structure composed of crystalline domains embedded in amorphous domains.

35. (new) The surface-modified substrate of Claim 34, wherein the surface film comprises at least 95 atomic percent carbon.

36. (new) The surface-modified substrate of Claim 34, wherein the surface film has a Mohs hardness of at least 9 as determined by a fretting wear test using a ruby ball.